

VEXVE

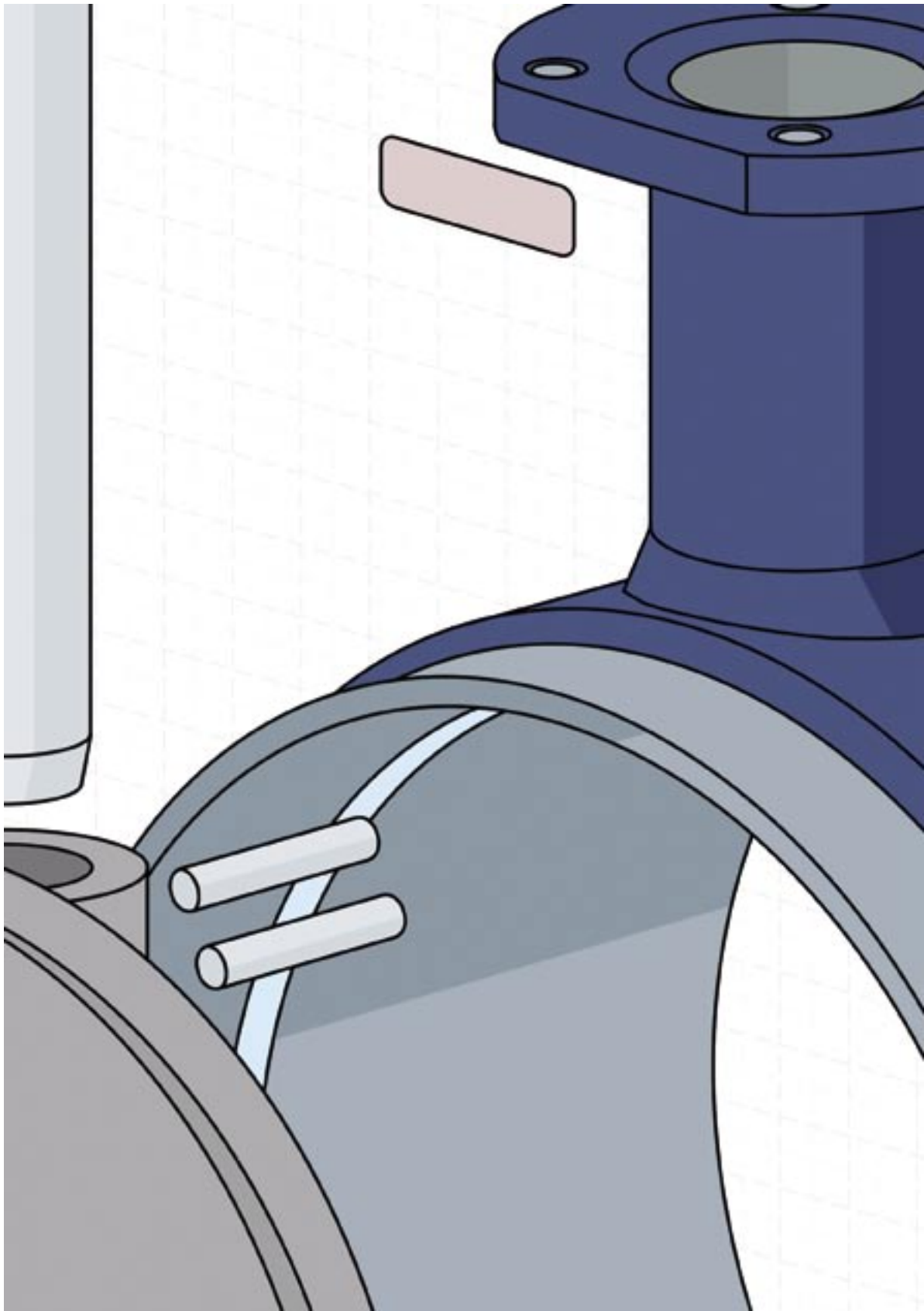


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1 General

Vexve butterfly valves are designed for control and/or closing use especially for district heating and distribution pipelines. Vexve BFC type butterfly valve can also be used in steam pipelines as well as district heating and distribution pipelines. The valves are designed and manufactured in Finland by Vexve Oy.

The Butterfly User Manual provides valuable information on Vexve BFC and BFS butterfly valves. Actuators and other accessories are only discussed briefly in this manual.

Additional information from Vexve valve products can be found from the individual product brochures.

Materials

The valve body is pressure equipment steel. The stem/shaft and disc are manufactured from the stainless steel. The disc seal material is nickel alloy steel. The stem/shaft seals are either O-rings (BFS Type) or graphite packing (BFC Type) depending on the end application.

Tightness

The valve is bi-directionally tight.

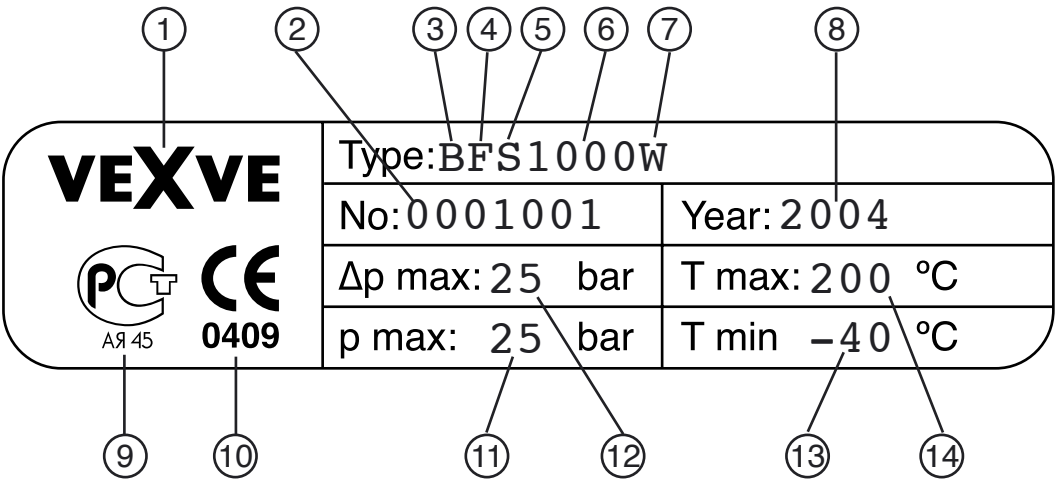
2 General Instructions and Cautions

Please read the following general instructions and safety precautions before handling and operating the Vexve butterfly valve:

- The valve should be lightly closed during the storage.
- Do not lift the valve on the actuator or on the gear.
Please follow the instructions from page 5 (valve lifting).
- The weight of the valve should be always taken care when handling the valve. Any lifting device used to move the valve shall be of sufficient size to support the weight of the valve.
- Beware of the discs cutting movement! The disc creates a cutting motion with its sharp angles during the valve closing.
- The valve may cause noise at the pipeline! Please be prepared to be protected against the noise.
- The installed valve in the pipeline can be extremely hot! Be protected to different temperatures.
- The manual gear or actuator may not been removed or dismantled if the valve is pressurized. It is recommended to use a special tooling and equipment (designed for actuator removal) when disassembled the valve.
- The shaft O-ring or graphite packing may not be dismantled when the valve is pressurized.
- Valve may not be used alone as a pipeline ending fitting. Always after the valve a blank flange need to be welded or/and connected to the pipeline end.
- Do not exceed the manufacturer's informed closing torques.
- Do not exceed the manufacturer's informed maximum temperature and pressure ranges (Please see the valve identification plate)

3 Valve Markings

A valve identification plate is located on the side of the actuator flange.



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- | | |
|---|--|
| 1. Valve Manufacturer | |
| 2. Valve Product Number | Stamp Number (first 4 numbers)
Individual Valve Number (last 3 numbers) |
| 3. Valve Type | B = Butterfly valve |
| 4. Product Group | F = Full Bore
R = Reduced Bore |
| 5. Valve Function | S = Shut-Off Valve
C = Control Valve |
| 6. Valve Size (DN) | |
| 7. Connection to the pipeline | W = Welding Ends
F = Flanged Ends |
| 8. Manufacturing Year | |
| 9. Russian Valve Certificate | |
| 10. CE-Mark and the number of the the notified body | |
| 11. Pressure Class | |
| 12. Approved maximum pressure difference when valve is closed | |
| 13. Approved minimum operational temperature | |
| 14. Approved maximum operational temperature | |

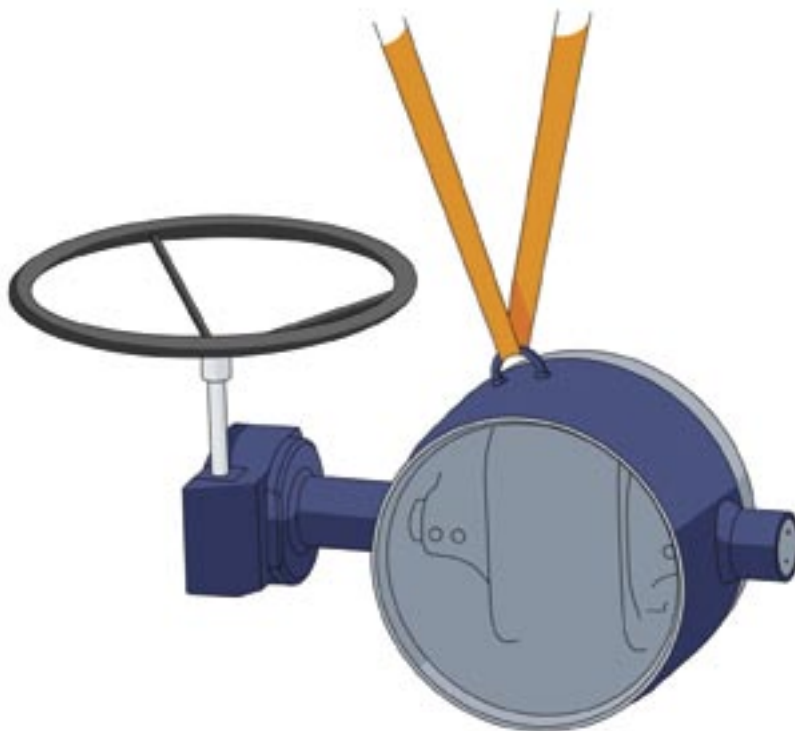
4 Valve Transportation and Storage

Please check that the valve or its parts are not damaged during the transportation.

Store the valve at clean and dry storage before the installation. Do not remove the flow port protectors before the installation.

During storage the valve must be lightly closed.

Please be careful when closing the disc. The disc creates a powerful cutting motion with its sharp edges during the valve closing.



Lift the valve as shown in the picture. Do not lift the valve from its actuator or stem.

The weight of the valve should be always taken care when handling the valve.

5 Installation and Welding to the Pipeline

Remove the valve flow port protectors before the installation. Check that the valve is undamaged and clean inside.

Do not remove the manual gear or actuator unnecessary from the valve. If the manual gear or actuator needs to be removed during the installation, please follow the actuator manufacturer's instructions how to adjust the actuator when reassembled.

It is recommended to install the valve according to the flow direction arrow.

The valve may only be installed to the applications and places that it is designed. If you are uncertain about the valves applicability for your intended purpose, please contact Vexve Oy for more information.

Do not exceed the valve performance limitations! Maximum operational pressures and temperatures can be found from the valve identification plate.

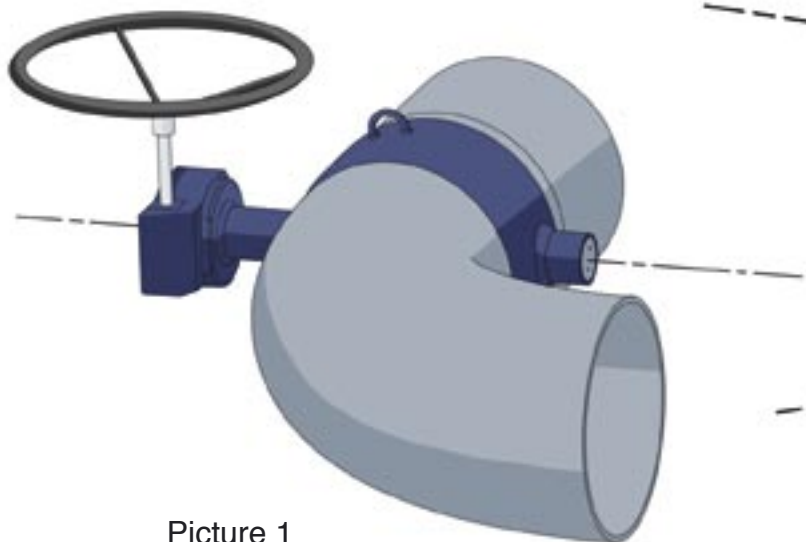
Special Instructions – Corners/Elbows & Pumps

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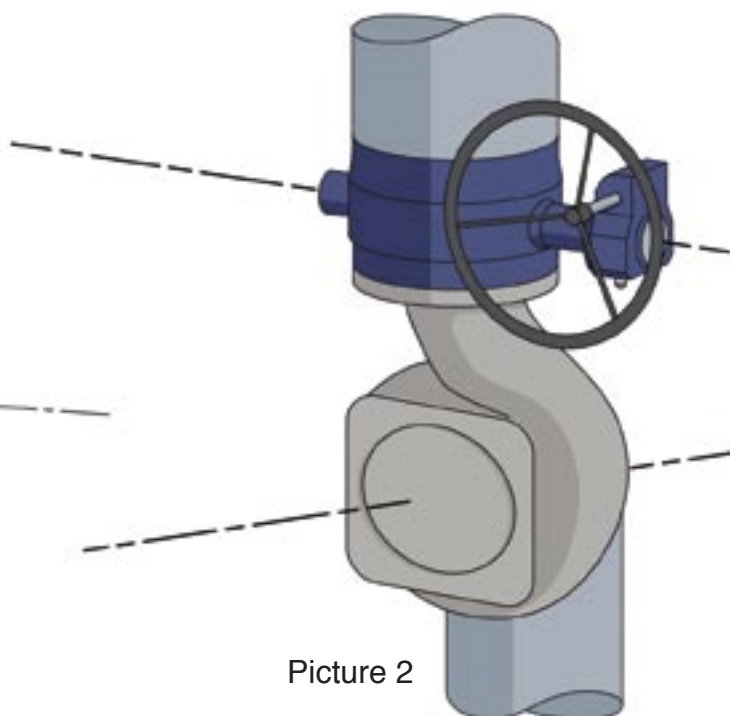
After corners and centrifugal pumps the pressure on the outer edge is higher than on the inner edge. When installing the butterfly valve immediately after a pipe elbow, we need to install the valve to the pipeline so that the shaft is directly at a 90-degree angle to the corner's middle point (perpendicular) (please see picture 1).

When installing the valve after centrifugal pump, the valve shaft needs to be perpendicular (at a 90 degree angle) to the pump shaft (please see picture 2).

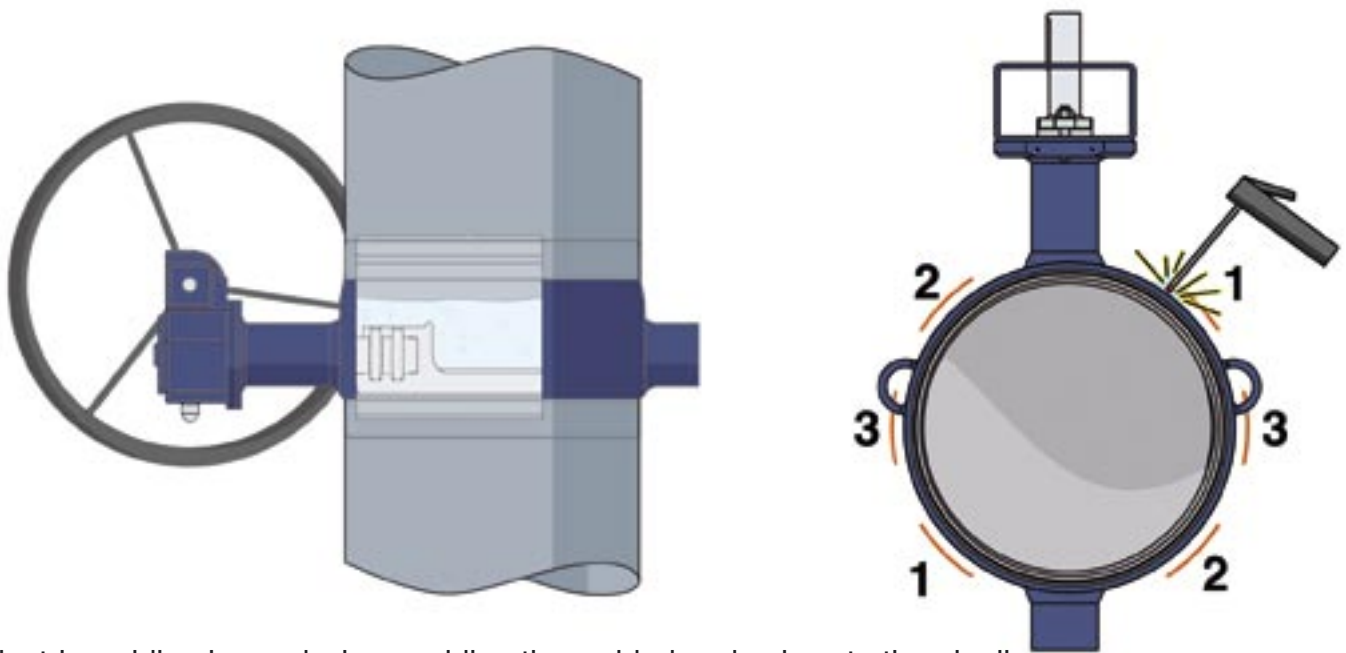
It is always recommended to install the valve so that the valve shaft is in horizontal position. This minimizes the forces to the valve disc bearings. However, if two (2) valves are installed in-line in close proximity, then the valve shafts need to be at a 90 degree angle (perpendicular) versus each other.



Picture 1



Picture 2



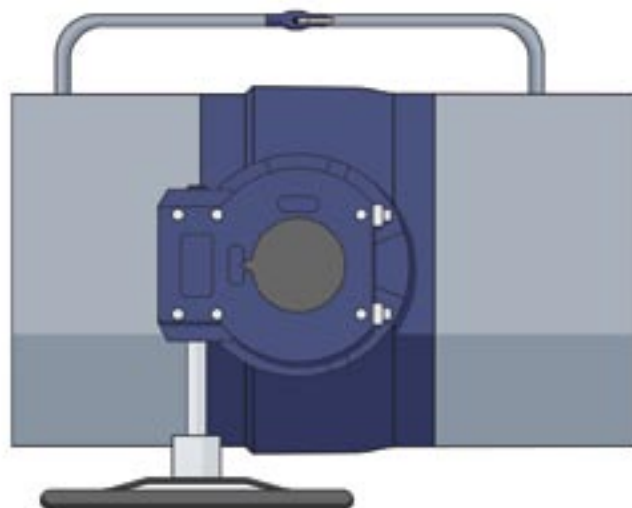
Electric welding is used when welding the welded end valves to the pipeline.

The valve needs to be closed during the welding.

If the valve will be welded to vertical pipeline, close the valve and cover it at least with 4cm water cushion. This water cushion will then ensure that the welding spatters from the welding procedure cannot damage the sealing and disc surfaces.

The valve should be welded to the pipeline so that 5cm seams are welded to the opposite sides of valves at the beginning as shown in picture in the right (1-2-3). After welding the short seams (e.g. 6 short seams) around the valve, you can continue the welding by welding the un-welded seam parts and finish welding.

Valve may not be used as a line ending fitting alone. Always after the valve a blank flange needs to be welded or/and bolted to the pipeline. Also the backside empty space needs to be filled with unoxygenous water to prevent the corrosion.



To minimize the pressure shocks, it is always recommended to use bypass valves with larger valves.

6 Commissioning

The pipeline needs to be flushed carefully after the valve installation. Close the valve during the flushing until the disc is open app. 5°. The small angle's increased flow cleans efficiently the possible contamination from the valve's sealing surfaces.

During the commissioning, the valve opening will be set to 15 degrees angle to minimize the potential pressure peak impact to the valve.

When installing the BFC valve type, the graphite packing tightness needs to be checked. If needed to tighten, tightening the hexagonal screws to tighten the packing. Please see the chapter 7.1.

Do not exceed the manufacturer's informed maximum allowable torque valves.

7 Maintenance

The valve does not need regular maintenance. In the following chapters three most potential maintenance issues are clarified.

When preparing for the maintenance, please note that the valve's surface temperature can be dangerously high (or cold) when the valve is installed to the pipeline. Be prepared against the potential accidents.

7.1 Stem's Graphite Packing and Tightening (BFC)

The BFC model has graphite packing and the packing should be checked on a regular basis. If there is leakage from the stem packing, the stem packing should be tightened by tightening the hexagonal tightening nuts/screws from the stem. The tightening screws and their location can be seen from the construction picture (#1 Hexagonal nut) at the page 10.

The valve may cause noise at the pipeline. Please be protected against the noise.

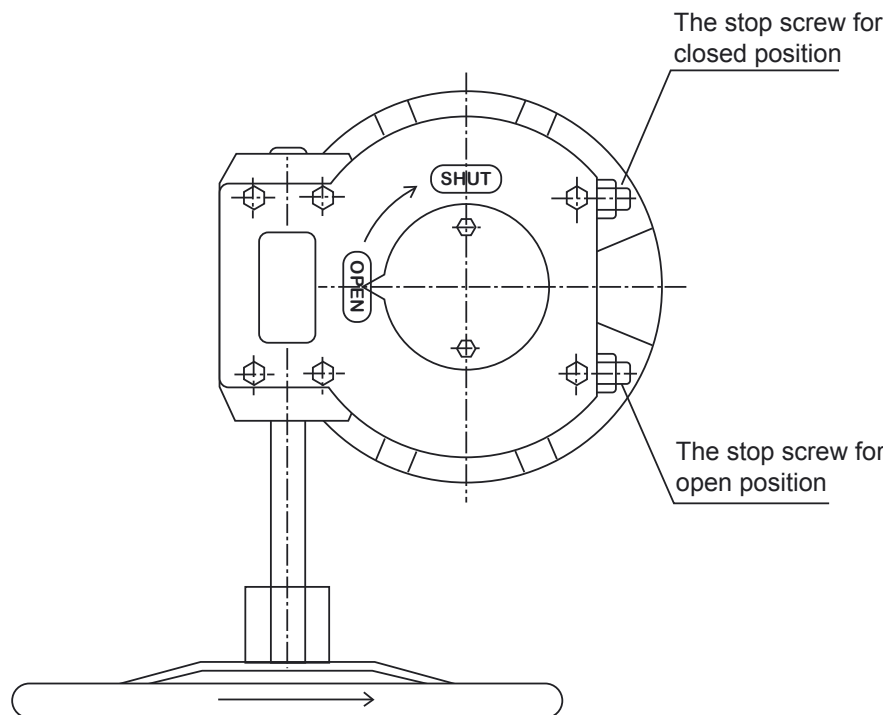
7.2 Manual Gear Installation

The manual gear or actuator may not been removed or dismantled from the valve if it is pressurized.

It is recommended to use a special tooling and equipment (designed for manual gear removal) when dismantled the valve gear.

Manual Gear Installation

1. Close the valve gear to the shut-off position
2. Clean the valve stem and gear bush from all the contamination
3. Crease the manual gear's bush (e.g. Spray Vaseline Würth HHS 2000)
4. Install the manual gear so that the hand wheel locates at the preferred position
5. Crease and install the nuts, screws and plates
6. Install the hand wheel to the manual gear
7. Turn the hand wheel 2-3 rounds to open the valve
8. Turn the butterfly valve closed up to the manufacturer's informed closing torque
9. When the valve is at the closing torque, tighten the closed position screw.
Then turn it back 1/4 turn.
10. The stop screw, it will be locked up either with the locking screw or with the locking sealant.
11. Turn the disc 90 degrees (to fully open position)
12. Tighten the stop screw for open position, and lock it with locking screw or locking sealant.



NOTE!

- 1) If the valve is stored for a longer period of time, the valve needs to be closed lightly for the storage.
- 2) Always readjust the stop screw after mounting the actuator.
- 3) Please do not exceed the manufacturer's closing torque values when closing the valve. The closing torques for Vexve butterfly valves can be found from a separate table. If you have additional questions on the closing torques or/and valve installation, please consult with the manufacturer.

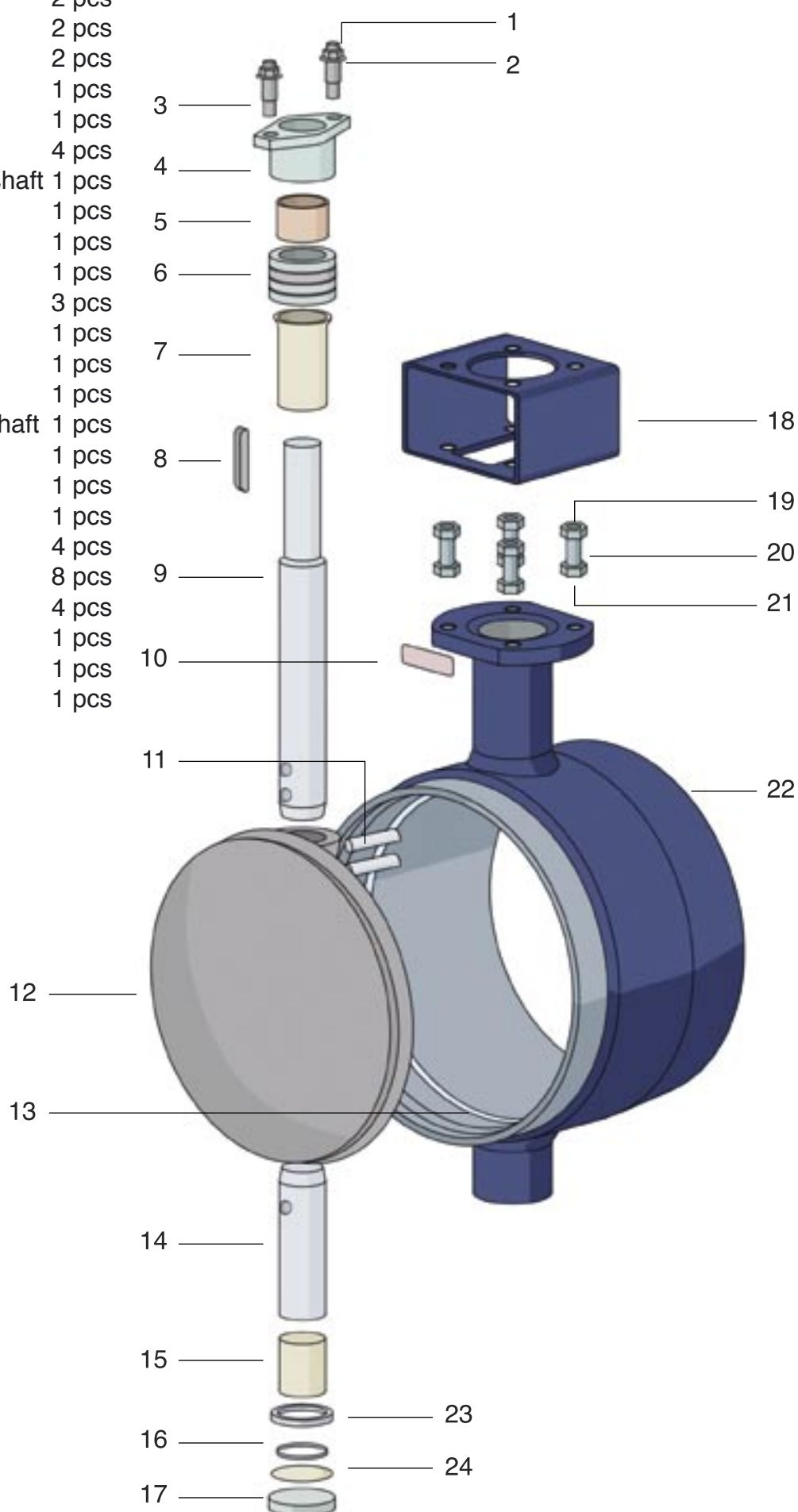
7.2.1 Electric and Pneumatic Actuator Mounting/Installation

The electric or pneumatic actuator installation should be done according to the actuator manufacturer's instructions.

Vexve Butterfly Valve User Manual

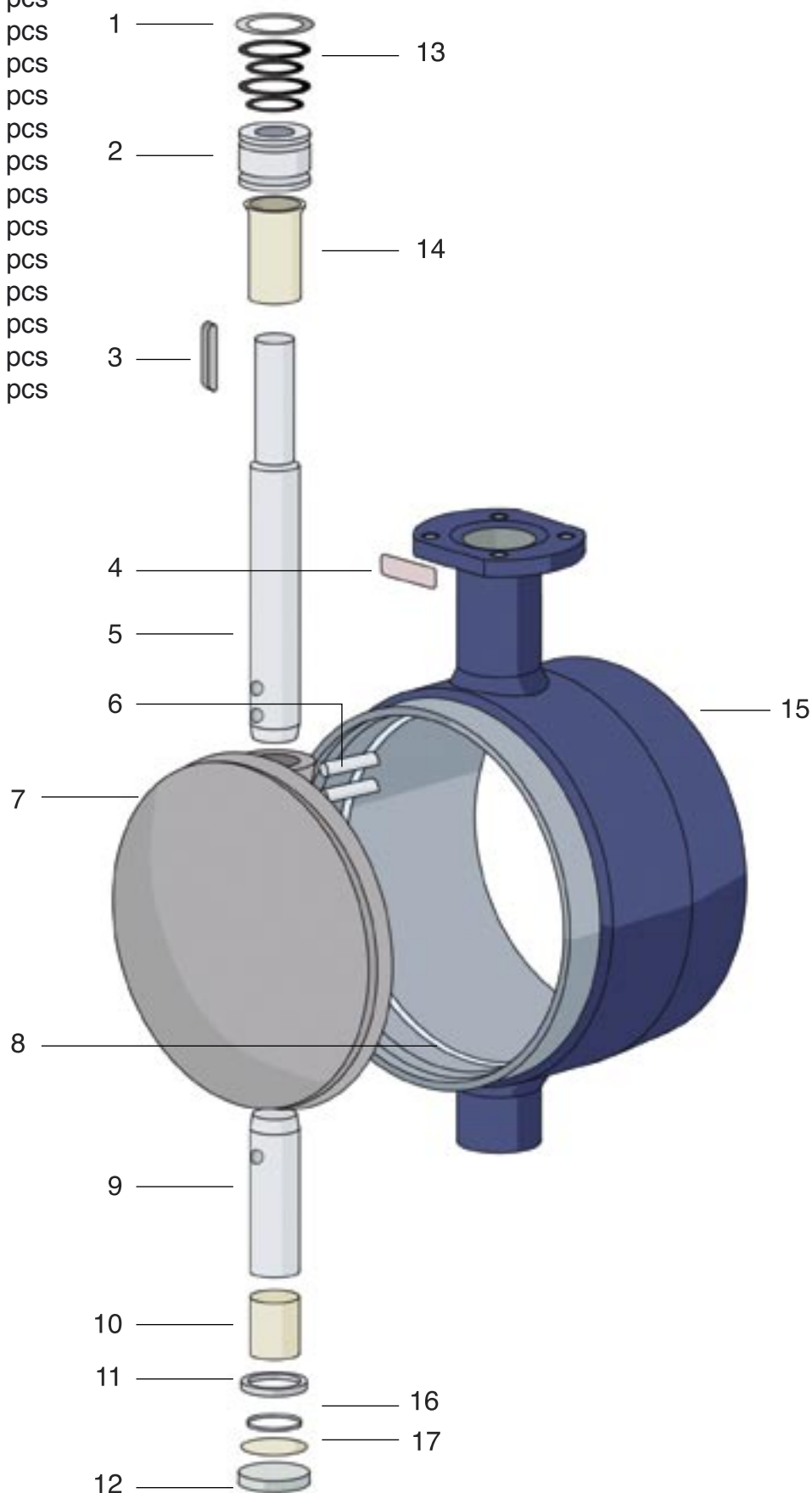
Contruaction of Vexve Type BFC

- | | |
|--------------------------------|-------|
| 1. Hexagonal nut | 2 pcs |
| 2. Base plate | 2 pcs |
| 3. Headless screw | 2 pcs |
| 4. Clamping bush | 1 pcs |
| 5. Slide bearing | 1 pcs |
| 6. Shaft packing | 4 pcs |
| 7. Bearing of the upper shaft | 1 pcs |
| 8. Key | 1 pcs |
| 9. Upper shaft | 1 pcs |
| 10. Identification plate | 1 pcs |
| 11. Pin | 3 pcs |
| 12. Disc | 1 pcs |
| 13. Disc seat | 1 pcs |
| 14. Lower shaft | 1 pcs |
| 15. Bearing of the lower shaft | 1 pcs |
| 16. Lock ring | 1 pcs |
| 17. Blind flange | 1 pcs |
| 18. Actuator base | 1 pcs |
| 19. Hexagonal nut | 4 pcs |
| 20. Base Plate | 8 pcs |
| 21. Hexagonal screw | 4 pcs |
| 22. Body | 1 pcs |
| 23. Positioner plate | 1 pcs |
| 24. Bearing plate | 1 pcs |



Contruction of Vexve Type BFS

1. Retaining ring	1 pcs
2. O-ring bushing	1 pcs
3. Key	1 pcs
4. Identification plate	1 pcs
5. Upper shaft	1 pcs
6. Pin	3 pcs
7. Disc	1 pcs
8. Disc seat	1 pcs
9. Lower shaft	1 pcs
10. Bearing of the lower shaft	1 pcs
11. Lock ring	1 pcs
12. Blind flange	1 pcs
13. O-ring	4 pcs
14. Bearing of the upper shaft	1 pcs
15. Body	1 pcs
16. Positioner plate	1 pcs
17. Bearing plate	1 pcs





Vexve Oy
Pajakatu 11
FIN-38200 Vammala
Finland
Tel. +358 3 51 831
Fax +358 3 5183 4241
vexve@vexve.fi
www.vexve.fi